DOCUMENT RESUME

ED 212 265 IR 009 971

AUTHOR Athanassiades, John C.
TITLE The Management of the Knowledge Revolution.
PUB DATE [78]
NOTE 18p.

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Administration; *Information Processing; *Information Scientists; *Information Systems; *Knowledge Level; Library Acquisition; Library Administration; Library Collections; *Revolution

ABSTRACT

This essay on the management of information presents areas of agreement and disagreement about the "knowledge revolution", its general effect on the world population, and its particular effect on libraries and other information systems, as well as on those who are charged with its management. The myth of Adam and Eve is used to symbolize the restricted or forbidden aspects of obtaining information, while Prometheus represents the encouragement to seek out and gather information. Two alternative themes are thus suggested: reduce the need for information, or increase the capacity for its processing. The discussion focuses on librarians and other information managers as general knowledge managers, with the image of knowledge specialists for particular organizations, whose function would be to identify, find, and deliver appropriate information to the teams or institutions they would serve. (RAA)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED212265

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

THE MANAGEMENT OF THE KNOWLEDGE REVOLUTION

by

John C. Athanassiades

IR009971

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

John C. Athanassiades

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

THE MANAGEMENT OF THE KNOWLEDGE REVOLUTION

By John C. Athanassiades, Ph.D.

I would like to talk to you about the Management of the Knowledge Revolution and what it means to all of us — especially to librarians.

In discussing this important topic, I will begin with points of relat_ve agreements, and proceed to areas of possible disagreement — and possible controversy.

Most pundits today seem to agree about at least one thing: that we have already entered the Post-Industrial Era, which, according to Daniel Bell[1] and others, is characterized primarily by the fact that Knowledge is replacing heavy industry as a source of wealth, and as a base of Power.

John McHale[2], for example, points out that despite the current scare about the decline of our material resources, the ultimate resource is the human mind, which cannot be exhausted, and the only limit, therefore, lies in the development of human skills and knowledge.

Indeed, less than one hundred years ago, uranium and radioactivity were a laboratory curiosity, aluminum a scarce metal, and chromium, cobalt, titanium, and the like — our present day "strategic metals" — were considered undesirable impurities by ore refiners of that period.

Today, given the awareness that knowledge is power and wealth, it is not surprising that knowledge-oriented enterprises are mushrooming and

rapidly becoming the core of developed societies, while traditional industries — such as steel and automobiles — are steadily declining. (It is estimated that, today, the knowledge-related industries account for more than one-half of the U.S. Gross National Product.)

In the past, such rapid shifts in wealth and power have been characterized as Revolutions. Therefore, it would not be too far-fetched if we would call this present change, also, a Revolution — or, more accurately, a Knowledge Revolution.

Monarchs, clergymen, warlords, robber barons, politicians, industrialists — even whole empires and civilizations — have risen to power, or fallen, as a result of new knowledge and new ideas. The French, the American, and the Russian Revolutions are some examples of bloody -- but nevertheless knowledge inspired — changes.

Our present Knowledge Revolution is a bloodless one. Yet, too, generates strains, conflicts and dislocations of significant magnitude -- many of which we are currently experiencing.

The present Knowledge Revolution, as we shall see, is not a new phenomenon, although its manifestations today may be different from some of its predecessors.

Indeed, the development of language, the domestication of animals, the development of agriculture, the spread of religions, the development of new philosophies and ethics and developments in the Arts, Science, and Technology, are some notable examples of Knowledge Revolutions.

Since "knowledge is power" -- what one knows often is more important than what one has -- and since librarians find themselves professionally involved in this Knowledge Revolution, one may ask: would librarians automatically gain wealth and power?

But before we speculate on that, we need to sharpen our understanding of Knowledge Revolutions.

What sparks them?

What problems beset them?

Why do they fail or succeed?

The answers to such questions not only will enable us to cope with our Knowledge Revolution, they may also provide clues as to what new roles librarians can have in it.

Let me point out that Mankind's quest for knowledge, and its Knowledge Revolutions, is so old, and so deeply embedded in its collective memory, that it has been incorporated into the mythologies of various peoples.

Two such myths are interesting and instructive paradigms of Knowledge Revolutions. Therefore, I shall mention them here very briefly.

One is the Biblical myth of Adam and Eve. The other is the myth of Prometheus, from Greek mythology.

Both myths depict Knowledge as the possession of some higher authority.

Both depict Knowledge as forbidden, or denied, to Man.

And both describe Knowledge Revolutions -- that is, attempts to wrest Knowledge from higher authorities, and make it available to Mankind.

But despite their similarities, the two myths also <u>differ</u> — significantly.

Take the myth of Adam and Eve, who were forbidden — but dared to taste — the fruit of Knowledge. And for this, they were expelled from Paradise.

This myth is interesting for many reasons.

First, it depicts Knowledge as <u>forbidden</u> to Man.

Second — and more important — it is a story of failure. Adam and

Eve were caught by the Higher Authority, and expelled from Paradise, unable to take possession of the Knowledge they so briefly tasted.

Third, the myth serves as a threat and a discouragement for future aspirants.

Clearly, this myth is an anti-Knowledge paradigm.

(By the way -- Eve shows greater initiative and daring than Adam.)

The other myth is that of Prometheus. You remember that he stole from the gods their jealously-guarded secret of fire, and gave it to Mankind. This myth, too, depicts Knowledge as initially inaccessible to Man. But, with the help of Prometheus -- representing, perhaps, superhuman effort -- Mankind was able to gain this knowledge: the secret of fire.

Clearly, this myth is a paradigm of daring and of success -- a myth encouraging the quest for new knowledge.

By the way, both myths suggest that Knowledge is Power, for both depict knowledge as the property of some higher authority which is unwilling to share it with Man.

It is not surprising, then, that -- true to the model of the myths -- we find that even today, those who possess or control knowledge -- be they gods, high priests, witch doctors, kings, governments, bosses, or gate-keepers of information -- seem so unwilling, or unable to share knowledge freely.

Now let's return for a moment to our newly-arrived "Post Industrial Era," where knowledge will be king(3) and where -- according to some -- there will be two pots of caviar in every refrigerator, two helicopters in every garage(4) and -- God knows what else.

According to others, however, hard times lie ahead. For we are facing a period of world-wide shortages, economic upheavals, racial and national

conflicts, and -- possibly -- nuclear holocaust[5]; surely, a sad testimonial to the fact that the Knowledge Revolution is out of control.

Such themes of prosperity found, or paradise lost, newer versions of the two myths I just described, seem to be pendulum-like swings of the same Paradise-Doomsday syndrome.

Therefore, at the risk of belaboring the point, let me say a couple of things more about our Post-Industrial society in the light of the present Knowledge Revolution...for only a clear understanding of where we are, and where we are going, will make the difference between success or failure, between paradise or doom.

Today, as in times immemorial, mankind continues its quest for knowledge. We are in the midst of yet another Knowledge Revolution.

The question is: Which paradigm are we going to follow? That of Adam and Eve, or that of Prometheus? Are we are going to opt for the status quo and shy away from knowledge, or are going to pursue knowledge and learn to cope with change?

Because today's Knowledge Revolution is producing dramatic changes and painful dislocations, many people feel uneasy and frightened.

Problems such as inflation, unemployment, crime, the arms race and the like not only are painful, but seem insurmountable and beyond control.

Since most people find it hard to cope with, let alone solve, such problems, they wishfully conjure up simplistic solutions for the return to the "good old days" — that is, the days before they felt frightened and insecure.

However, most of us, while we wish to go back to the "good old days," do not want to forego any of the advantages of the new knowledge. So we clamor for a return to the "status quo ante" -- but spiced with the new technology and the new knowledge.

That, of course, is neither possible -- nor desirable. But it is not surprising, either.

We cannot turn back the clock, no matter how much we wish to do so. To quote Omar Khayyam,(6)

"The moving finger writes, and, having writ, moves on..."

But even if we could reverse the clock, we should not want to, for only blind men or fools would want to bring back things like the Crash of the Twenties, the Depression of the Thirties, the War of the Forties, and so on.

Perhaps we can avoid future pitfalls if we understand better some of the blind spots of our present thinking.

In our society, the "good old days," which tend to be identified by many with a sense of well being and "success," are attributed, according to Peter Drucker(7) to the marriage of the Protestant Work Ethic to Industry and Science (Not a marriage really, but a menage a trois!).

It is not surprising, therefore, that we turn to this threesome whenever we try to cope with the problems of our ailing society.

Saint Augustine, who understood human nature better than most of us, had a good explanation for this kind of thinking. The Present, he said, has a three-fold meaning for each of us:

One, it is the Present, as we experience it now.

Two, it is the Past, as we remember it. And

Three, it is the Future as we visualize it now -- that is, the Future in the form of present expectations.

Thus, our present views are influenced not only by what our expectations of the future are, but also by our experiences of the Past.

Psychologists confirm this when they tell us that future expectations develop from past experiences.

This is why even the most daring plans for the Future usually opt for solutions that are based on the Past, and promise to re-create our nostalgia for the "good old past".

Take for example, descriptions of even the most Far-Out Science-Fiction of space colonies. They are nothing but good old earth cities in space — including mini-shopping malls, mini-plazas, and mini-drugstores.

Or, take the film "Star Wars," which is nothing more than "good old dog fights" with spaceships and computers.

This is perhaps why we insist on resurrecting "Good Old Industry" with huge Government loans, massive tax incentives and protectionist trade measures. Why we blithely continue to pour mega-dollars into bottomless pits like Chrysler, and other such monuments to corporate inefficiency and incompetance, while attempting to balance our National Budget by axing education, health, and similar government programs.

Others feel that the road to the "Good Old Days," and to "Success," is through the revival of the "Good Old Work Ethic". They clamor for a return to work, work, work and no leisure. This ... is an era where technology and automation make human labor almost obsolete?

Still others, you may have noticed, argue for a return to the "Good Old Morality," regardless of some glaring contradictions such as:

Being in favor of Charity...but against so-called "welfare bums"... like babies, the crippled and the elderly...

In favor of a fair day's work...but against a fair day's pay...

In favor of the United States Constitution...but against Human Rights.

And so on...

Undoubtedly all these folks have good intentions, but let us remember that good intentions can pave a hellish road...not necessarily a road to

success. Let's be logical, too. Even these backward-lookers who try to cure society's ills by returning to the past, would be the first to admit that you cannot drive a car forward by looking only at the rear view mirror.

We must accept, therefore, that we cannot build a sound Future by looking only to the past; and we cannot develop sound solutions for our problems on good intentions alone.

Today, more than ever, we need to look ahead with our eyes wide open. We need to pay more attention to the generation and use of knowledge for the improvement of society. For their neglect may have disastrous consequences for us -- just as it did for ancient Sparta.

Aristotle -- who knew a thing or two about Knowledge -- explained the sudden decline of Sparta by noting that Sparta did very well while fighting and building up its empire.

But -- says Aristotle -- upon completing this goal, Sparta collapsed. For while the Spartans were busy building their military empire, they neglected the fine art of leisure.(8)

(I should explain here that the Greek word for leisure "Scholazein" also means learning and education, the root-word for school.)

Yes, we too are running the risk of neglecting education -- and its twin, Science.

I suggest, therefore, to those who blindly advocate a return to the ethic of less leisure and less education to re-examine their premises.

However, let us note, also, that knowledge is a double-edged sword -- capable of producing both good and evil. Therefore, Wisdom -- the judicious application of knowledge -- should be our aim and guiding light.

Homer put it very aptly almost three thousand years ago:

> "It is not strength, but art, obtains the prize;
> To be swift is less than to be wise..."(9)

In the past, the generation of Knowledge was a rather slow and difficult process — thus, a limiting factor to knowledge Revolutions. Today, the advanced countries of the world have made enormous strides in their ability to generate large amounts of knowledge. Estimates of the volume of information generated are staggering.

It is estimated, for example, that the accumulated stock of 100 million Books and other primary sources of information is increasing at an annual rate of 2 million items.

This unprecedented growth of information has created a paradoxical situation. While mankind is literally swamped with all kinds of documents and records, there is, at the same time, a lack of reliable and relevant information. "We have yet to learn how to channel the generation of this information wisely...", says Dr. George Anderla[10], Director of the Paris Institute d` Etudes Politiques. And he warns that unless we find better ways to organize and distribute information, it will become a source of pollution rather than of greater power and wealth.

The problem becomes even more complex when one takes into consideration the fact that research people spend an estimated one million man-years annually on documentation and related aspects of the handling of scientific and technical information alone.

Thus despite, or because of, the unprecedented strides in man`s ability to generate information, man seems to have reached a new barrier unlike those experienced before — man`s inability to absorb and apply knowledge as fast as he can produce it.

This, in my view, is one of the major problems of modern societies. And despite the current advances in EDP and computer technology, no satisfactory solution has been developed yet.

Let us look at the problem of information from a management point of view. Lawrance and Lorch[11] have identified a close relationship between an organization's ability to process information and organizational effectiveness. According to these researchers, information affects Integration — the process of coordinating the efforts of the various parts of an organization, and Differentiation — the degree to which an organization develops specialized and dissimilar parts, in the following ways:

1) The greater the rate of change of the environment, the greater the uncertainty of information available; and the longer the lag of information feedback in an organizational unit (or sub-system), the greater the degree of differentiation between the various units of the organization will be.

2) The greater the degree of differentiation between units of an organization, he greater the need for integration (or coordination) -- and the greater the difficulty of achieving it.

Thus, under stable environments, the organization's traditional information processing mechanisms can cope with the moderate communication-load requirements. In a rapidly changing environment, however, the effort for coordination increases, which increases the amount of information that must be processed resulting, usually, in serious communications overloads. There are, basically, two alternatives for dealing with this problem:

1) Reduce the need for information:

a) by creating slack resources. That is, maintain large stockpiles of materials, people, and so forth, so that the organization can continue operating despite communications log jams; or

b) by creating self-contained units -- information units independent of each other, so that a unit can continue operating, despite communication blockages in related units.

It must be said that both of those ways to reduce the need for information are expensive and inefficient.

The second alternative is to Increase capacity for processing information:

a) by increasing information processing systems -- that is, computers, clerical personnel, et cetera.

b) by developing boundary spanning relationships -- such as liaison positions -- that is, placing managers in positions which span two or more functional units -- or two or more areas of expertise -- for the purpose of coordinating activities and the flow of information across boundaries.

Undoubtedly, using EDP to speed up the processing of information is important and much has been accomplished along this line in recent years.

However, we must not forget that the ultimate goal is not the processing of information for the sake of doing it, but rather in order to generate, transfer and utilize knowledge, and achieve understanding. Therefore, what is needed urgently -- beyond computers and EDP -- is knowledge facilitators. And in my opinion, in this area lie the greatest challenges and opportunities for librarians in the future.

So let's return to our initial question. Will librarians have a role in the Knowledge Revolution?

The answer is: Yes, But ...

Yes -- librarians can play an extremely important role.

But -- that role will NOT be librarianship as we know it today.

Traditional libraries are already obsolete.

Despite the mammoth effort and expense that has gone into the modernization of libraries during the last few years... despite the use of sophisticated communications and computer technologies... and despite the adoption of many modern management techniques to streamline operations and cut operating costs... most libraries have remained traditional — in function and outlook.

Traditionally, libraries have looked at knowledge as contained in books — and, therefore, their function as warehouses of books.

Recent advances in communication and computer technologies — and their timely adoption by libraries — have made it possible, up to now, to cope with the ever-increasing proliferation of knowledge... as far as this warehousing function is concerned.

BUT...

this is where libraries have gone wrong. With the ever-increasing proliferation of knowledge, and the great uncertainties created by the Knowledge Revolution, the most serious problems that organizations face seem to be at the boundaries between the knowledge producing and the knowledge consuming units of organizations.

Where serious problems exist is at the interface — between the Library and the producers and users of knowledge.

And the expected continuation of this proliferation will make matters worse.

It is estimated that the volume of literature in many fields is doubling every few years.(12) And in some fields, the accumulation is so great that it would take almost five man-years to carry out a thorough search.

Obviously, these conditions create insurmountable "communications overloads" -- not only for librarians, but also for the user. And thus, productivity is reduced.

Most professionals report NOT need for more information, but a need for ways to break this communication jam.

They are asking for greater selectivity in information services -- more evaluation and synthesis.(13)

An interesting example is reported by Gordon Monsen(14), President of a company that sells on-line searches. He tells of a senior manager of a large company who requested a quick search on some specific information he needed. The search, Mr. Monsen reports, produced over 100 pages of bibliography. Upon receiving it, the manager called Monsen, complaining that he had neither the time -- nor the energy -- to wade through all that stuff.

Now, it is true that some organizations are responding to this problem through the use of "technological gatekeepers" -- scientists or engineers who are responsible for keeping themselves informed of the relevant developments in their own field -- and to whom others in the organization go for information whenever the need arises.(15)

Indeed, as already mentioned, despite the increasing use of computers and EDP technology, an estimated one million scientist-years is wasted annually on documentation and related activities.

But as the proliferation of knowledge continues to grow, these problems will be felt more acutely by icreasing numbers of organizations. Therefore, these are the areas, I believe, where the greatest challenges -- and opportunites -- for librarians will develop; and where librarians will make their greatest contributions -- not simply as employees of Knowledge Warehouses, but as members of knowledge-producing, or Knowledge-utilizing teams.

"Putting Knowledge to Work", the Special Libraries Association's motto, adopted in 1909, can still serve as a guide for the new function of librarians — as managers of Knowledge Teams.

Such an idea is not new. But its time has come for much broader utilization.

One type of such a team — called the Patient-Care Team — has been in existence in certain hospitals since 1971. This kind of team, besides the usual mix of M.D.'s and others, reportedly includes a pharmacist and a clinical librarian as peer members. The librarian makes the hospital rounds with the team — attending meetings, educational conferences, and so forth — so that the librarian can be best prepared to identify the team's information needs — to anticipate them, to find the information, and to deliver it to the team in a very short time.(16)

I believe that similar teams — which I would label "Knowledge Management Teams" — will become necessary in increasing numbers of fields of specialization and in organizations.

In the past, librarians (from Latin; liber, means book) developed their skills — and their function — in the storage and retrieval of books. Today, librarians are acquiring new skills and are becoming increasingly proficient in the use of computers and EDP. But in focusing now on the computer, as they did earlier on the book, instead of on the contents — knowledge — librarians are running the risk of transforming themselves into "computerians" or "EDPerians" rather than becoming knowledge facilitators and managers of knowledge teams.

You might, therefore, ask yourselves some very pertinent questions.

Does your organization recognize the need for Knowledge Management Teams?

Do you, yourself, have the training that will maximize your contribution to such a team?

Are you prepared to modify your job and shed the traditional image so that you can become a peer member of a knowledge-management team?

Have you prepared yourself for the many facets of management and peer relationships that the new Knowledge-Management job entails?

Imagine, for a moment, that you came across the following job description.

It reads:

TITLE: Group Knowledge Manager

IMAGE: Knowledge Specialist

FUNCTION: To optimize the team`s productivity by identifying, finding, and delivering expeditiously, the team`s knowledge needs.

Are you prepared -- or preparing yourself -- so that you could fit that description?

The answer is up to you.

BIBLIOGRAPHY

1. Bell, D., The Coming of Post-Industrial Society, Basic Books, N.Y., 1973.

2. McHale, J., The Changing Information Environment, Westview Press, Bolder, Colo., 1976.

3. Bell, D., loc. cit.

4. Kahn, H., and B. Bruce-Briggs, Things to Come, Macmillan, N.Y., 1972.

5. Vecca, R., The Coming Dark Age, Doubleday, N.Y., 1973. and

   Heilbroner, R., An inquiry into the Human Prospect, W.W. Norton, N.Y., 1974.

6. Khayyam, O., The Rubaiyat, Riverside Press Ltd, Edingburgh

7. Drucker, P., The Age of Discontinuity, Harper and Row, N.Y., 1974.

8. Aristotle, Politics, Random House, N.Y., 1941.

9. Homer, Iliad

10. Anderla, G., "The Future of Information" OECD Observer, Apr. 1973.

11. Lawrance, P., and J. Lorch, "Differantiation and Integration in Complex Organizations", Adm. Scie. Qtly., 1967.

12. Bernal, J.D., "The transcription of Scientific Information" Proceedings of the Int'l Confer. on Scie. Inform., Nov. 21, 1978.

13. Lancaster, F.W., and L. Smith, "Science, Scholarship and the Communition of Knowledge", Library Trends, Winter, 1978.

14. Monsen, G., "A Case Study in Business/Management Information" Proceedings of the ASIS, vol. 15, 1978.

15. Allen, T., "Organizational Aspects of Information Flow Technology", ASLIB Proceedings, Nov. 1968.

16. Roach, A., "The Health Science Librarian", Library Trends, Fall, 1978.